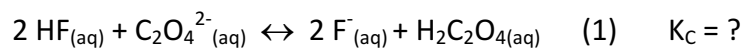


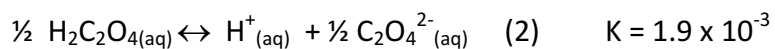
Name: _____

Solve the following problems:

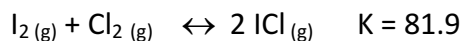
1. (6 pts) Find K for the following reaction:



Use the following data to find the unknown K_{C} .

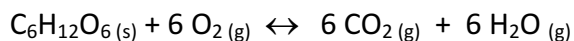


2. Consider the following reaction and its equilibrium constant:



A reaction mixture contains $[\text{I}_2] = 0.114 \text{ M}$, $[\text{Cl}_2] = 0.102 \text{ M}$, and $[\text{ICl}] = 0.355 \text{ M}$. Is the reaction mixture at equilibrium? If not, in which direction will the reaction proceed?

3. (7 pts.) The following reaction is exothermic.

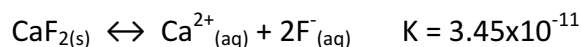


(a) Predict the effect (shift right, shift left, or no effect) of the following:

- i. Adding some O_2 to the reaction mixture - _____
- ii. Removing some $\text{C}_6\text{H}_{12}\text{O}_6$ from the reaction mixture - _____
- iii. Increasing the temperature of the reaction mixture - _____
- iv. Increasing the volume of the reaction mixture - _____
- v. Adding some H_2O to the reaction mixture - _____
- vi. Adding a catalyst to the reaction mixture - _____

(b) Will the equilibrium constant of the reaction increase or decrease if the temperature is reduced?

4. (8 pts) Consider the dissolution of silver cyanide in water:



- (a) Based on the value of K , is CaF_2 a soluble or insoluble salt? Explain.
- (b) Write the equilibrium constant expression. Is the equilibrium homogeneous or heterogeneous?
- (c) Find the $[\text{Ca}^{2+}]$ and $[\text{F}^{-}]$ at equilibrium.
- (d) Find K for $\text{Ca}^{2+}(\text{aq}) + \text{F}^{-}(\text{aq}) \leftrightarrow \text{CaF}_2(\text{s})$